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19320A MLRS MISSILE NUMBER FV3-06 FV3-16 FV3-24 ROUND
NUMBER 479/AT2-43 4..(U) ARMY ELECTRONICS RESEARCH AND
DEVELOPMENT COMMAND WSMR NM ATM.. D.C KELLER 20 JUL 83
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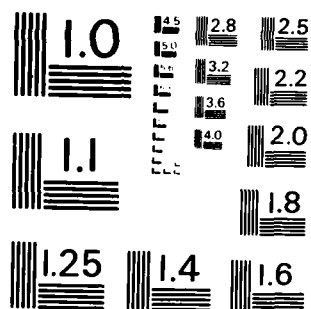
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METEOROLOGICAL DATA REPORT

19320A MLRS

Missile Number FV3-06, FV3-16, FV3-24
Round Number 479/AT2-43, 480/AT2-44, 481/AT2-45
20 July 1983

by

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ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, NEW MEXICO

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UNITED STATES ARMY ELECTRONICS COMMAND

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INTRODUCTION

19320A MLRS, Missile Number FV3-06, FV3-16 and FV3-24, Round Numbers 479/AT2-43, 480/AT2-44 and 481/AT2-45, were launched from LC-33, White Sands Missile Range (WSMR), New Mexico, at 0845:01, 0845:07 and 0845:11 MDT, 20 July 83. The scheduled launch times were 0845:00, 0845:04.5 and 0845:09 MDT.

DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

1. Observations

a. Surface

(1) Standard surface observations to include pressure, temperature ($^{\circ}\text{C}$), relative humidity, dew point ($^{\circ}\text{C}$), density (gm/m^3), Wind direction and speed, and cloud cover were made at the LC-33 Met Site and T-0 Minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

b. Upper Air

(1) Low level wind data were obtained from Pilot-balloon observations at:

SITE AND ALTITUDE

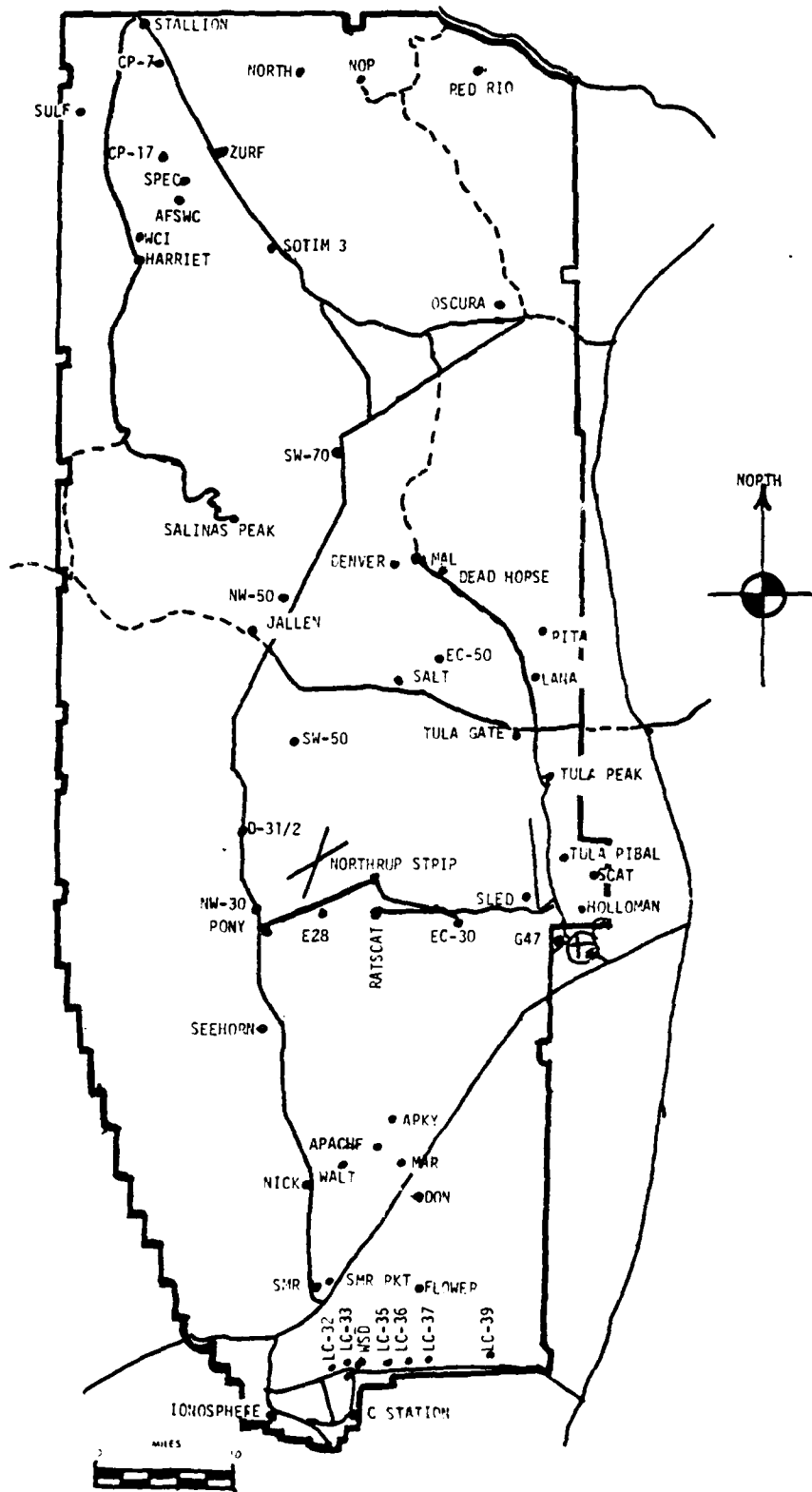
LC-33 1750 Meters
SMR 2000 Meters

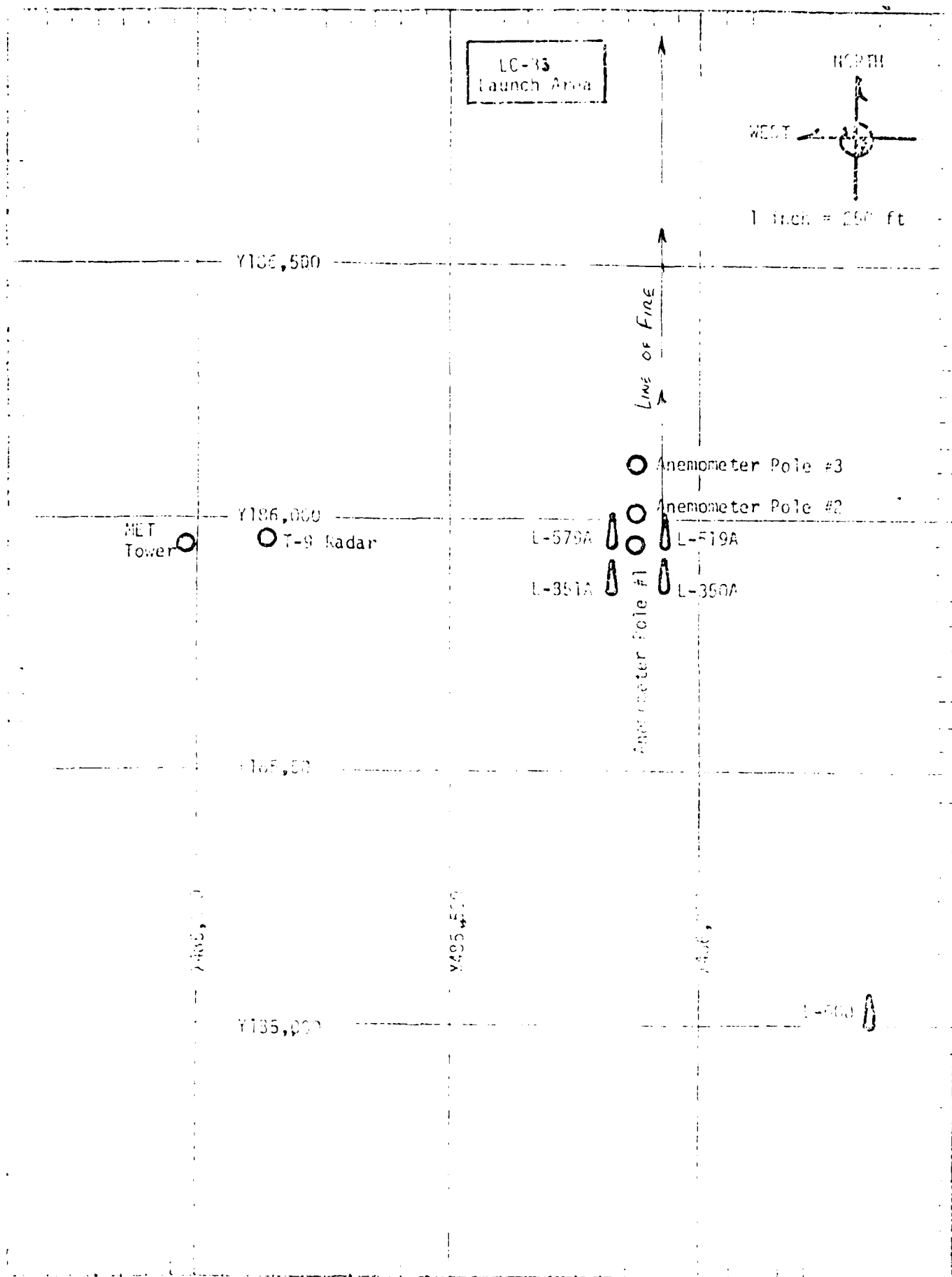
(2) Air structure data (rawinsonde) were collected at the following Met Sites.

SITE AND TIME

WSD 0700 MDT
WSD 0845 MDT

WSMR METEOROLOGICAL SITES





PROJECT SURFACE OBSERVATION

TABLE 1 STATION LC-33

DATE 20 JUL 83 X= 484,982.73 Y= 185,957.73 H= 3995.00

TIME M D I	PRESSURE mbs	TEMPERATURE OF °C	DEW POINT OF °C	RELATIVE HUMIDITY %	DENSITY gm/m ³	DIRECTION degs In	WIND SPEED kts	CHARACTER kts	VISIBIL- ITY
0845	884.0	26.5	15.6	51		138	03		.35

OBSTRUCTIONS TO VISIBILITY	CLOUDS						REMARKS
	1st LAYER		2nd LAYER		3rd LAYER		
	AMT	TYPE	HGT	AMT	TYPE	HGT	
	1	CU	6900				HAL QDS

PSYCHROMETRIC COMPUTATION

TIME:	0845	
DRY BULB TEMP.	26.5	
WET BULB TEMP.	19.0	
WET BULB DEPR.	7.5	
DEW POINT	15.6	
RELATIVE HUMID.	51	

TABLE 2 LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

POLE #1 X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL			POLE #2 X485,874.29 Y186,012.00 H4033.57 53.0 ft. AGL			POLE #3 X485,877.29 Y186,116.06 H4063.92 83.6 ft. AGL		
T-TIME SEC	DIR DEG	SPEED KNOTS	T-TIME SEC	DIR DEG	SPEED KNOTS	T-TIME SEC	DIR DEG	SPEED KNOTS
T-30		CALM	T-30	137	03	T-30	132	03
T-20		CALM	T-20	125	02	T-20	131	05
T-10		CALM	T-10	093	02	T-10	126	04
T 0.0		CALM	T 0.0	100	01	T 0.0	130	03
T +10		CALM	T +10	099	CALM	T +10	118	05

TABLE 3 LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #2, 62 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KNOTS	T-TIME SEC	DIR DEG	SPEED KNOTS
T-30	118	03	T-30	121	03
T-20	120	03	T-20	124	04
T-10	155	03	T-10	129	04
T 0.0	138	03	T 0.0	113	05
T +10	117	05	T +10	116	05

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #4, 202 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KNOTS	T-TIME SEC	DIR DEG	SPEED KNOTS
T-30	115	05	T-30	116	05
T-20	118	05	T-20	116	05
T-10	119	04	T-10	117	05
T 0.0	110	05	T 0.0	119	05
T +10	111	05	T +10	121	05

TABLE 4

T-TIME PILOT-BALLOON MEASURED WIND DATA

DATE 20 July 1983

SITE: LC-33

TIME: 0845 MDT

WSTM COORDINATES:

X= 484,837.34

Y= 184,124.44

H= 3,975.57

SITE: SMR

TIME 0845 MDT

WSTM COORDINATES:

X= 472,44.85

Y= 213,731.96

H= 4,000.99

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	138	03
150	159	13
210	159	15
270	156	12
330	150	10
390	142	08
500	140	04
650	171	06
800	177	08
950	178	09
1150	187	07
1350	178	05
1550	171	09
1750	174	08
2000	MISG	

Data obtained from a Double Theodolite
Tracked pilot-balloon observation.

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE		CALM
150	017	02
210	257	01
270	315	01
330	253	01
390	129	03
500	152	03
650	160	07
800	158	10
950	178	10
1150	175	09
1350	155	06
1550	164	08
1750	177	06
2000	190	05

Data obtained from a RAPTS T-9
Radar Tracked pilot-balloon observation.

AIMING AND T-TIME COMPUTER MET MESSAGES
20 July 1983

WSD 0700 MDT
METCM 1324064
201300122883
00320002 29710883
01267009 29720873
02306005 29730848
03324012 29480810
04324011 29110764
05301011 28710720
06101006 28400679

WSD 0845 MDT
METCM1324064
201480122884
00249006 30050884
01300011 29910874
02287004 29760849
03311009 29440811
04315006 29130765
05306007 28710721
06122004 28320679

GEODLTIC COORDINATES
32.40043 LAT DEG
106.37033 LON DEG

SIGNIFICANT LEVEL DATA
2010020301
WHITE SANDS

TABLE 6

STATION ALTITUDE 5000.00 FT 10.1
20 JUL 83 0700 MDT
ASCENDING 10.1

PRESSURE	GEOMETRIC ALTITUDE	TEMPERATURE AIR	DEWPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT
885.0	3489.0	21.9	15.7	68.0
871.8	4353.9	21.7	15.3	67.0
861.7	4687.2	22.2	15.3	65.0
850.0	5079.6	22.2	15.1	64.0
781.9	7450.8	17.8	11.8	68.0
720.6	9727.0	11.7	10.1	90.0
700.0	10520.8	11.1	9.3	83.0
676.2	11415.9	9.3	5.1	75.0
640.8	12682.3	5.7	2.9	82.0
638.4	13034.1	5.0	.8	73.0
602.3	14589.3	1.9	-4.6	62.0
576.1	15765.6	-1.1	-9.2	50.0

3

GEODETIC COORDINATES
52°40'04.3" LAT DEG
106°37'03.3" LONG DEG

UPPER AIR DATA
2010020301
WHITE SANDS
TABLE 7

STATION ALTITUDE 5989.00 FEET MSL
20 JULY 83
ASCESSION 140. 501
0700 MDT

GEOMETRIC ALTITUDE FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KILOM. PER HOUR	DIRECTION DEGREES (TN)	WIND DATA SPEED KILOM.	INDEX OF REFRACTION
3989.0	885.0	21.9	68.0	1034.6	671.8	180.0	1.9	1.000308
4000.0	882.7	21.9	68.0	1034.2	671.8	180.0	2.0	1.000308
4560.0	867.4	21.9	66.1	1016.2	671.8	180.8	4.0	1.000302
5000.0	852.3	22.2	64.2	997.7	672.1	181.1	6.1	1.000297
5500.0	837.5	21.4	64.7	983.0	671.1	181.2	8.2	1.000291
6000.0	822.9	20.6	65.6	969.1	670.0	181.3	10.2	1.000286
6500.0	808.5	19.6	66.4	955.4	668.9	181.3	12.3	1.000280
7000.0	794.4	18.6	67.2	941.9	667.8	181.6	12.6	1.000274
7500.0	780.5	17.7	68.5	928.7	666.6	182.3	12.4	1.000269
8000.0	765.7	16.3	73.3	916.4	665.1	182.1	12.1	1.000266
8500.0	753.0	15.0	78.1	904.3	663.5	179.3	11.4	1.000262
9000.0	739.6	13.6	83.0	892.5	662.0	176.2	10.8	1.000259
9500.0	726.5	12.3	87.8	880.8	660.4	169.5	9.1	1.000255
10000.0	713.5	11.5	87.6	867.7	659.4	158.9	7.4	1.000249
10500.0	700.7	11.1	83.2	853.6	658.8	142.2	5.9	1.000242
11000.0	688.0	10.2	79.2	841.2	657.6	110.8	4.6	1.000234
11500.0	675.6	9.3	75.1	829.1	656.4	74.2	3.1	1.000227
12000.0	663.3	7.8	77.9	818.5	654.5	53.9	7.2	1.000222
12500.0	651.2	6.3	80.9	808.2	652.7	40.2	9.6	1.000218
13000.0	639.2	5.1	73.9	797.3	651.1	41.7	12.2	1.000209
13500.0	627.4	4.1	69.7	785.7	649.8	46.5	13.5	1.000203
14000.0	615.7	3.1	66.2	774.1	648.5	53.4	14.5	1.000198
14500.0	604.3	2.1	62.6	762.8	647.2			1.000192
15000.0	593.6	1.2	57.8	751.2	646.1			1.000187
15500.0	581.9	.4	52.7	739.6	645.0			1.000182

STATION ALTITUDE 3989.00 FEET MSL
20 JULY 83
ASCENSION NO. 301

NAVJAGORY LEVELS
2010020361
WHITE SANDS

GEODETIC COORDINATES
32.40043 LAT DEG
106.37033 LON DEG

TABLE 8

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM.		WIND DATA	
MILLIBARS	FEET	AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE	PERCENT		DIRECTION DEGREES (TN)	SPEED KNOTS
859.0	5075.	22.2	15.1	64.		181.1	6.4
801.0	6799.	19.0	12.7	67.		181.5	12.6
750.0	8611.	14.7	11.1	79.		170.6	11.3
700.0	10516.	11.1	8.3	83.		141.1	5.8
650.0	12535.	6.1	3.1	81.		45.7	9.8
600.0	14673.	1.7	-5.0	61.			

STATION COORDINATES
32-40043 LAT 16G
106-37033 LONG 16G

SIGNIFICANT LEVEL DATA
2019020300Z
WHLF 54005

TABLE 9

PRESSURE	GEOMETRIC ALTITUDE MILLIBARS HCL FEET	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT
985.6	3689.0	26.0	54.0
670.2	4431.9	25.4	60.0
650.0	5107.4	21.0	64.0
770.7	7553.3	17.0	70.0
750.5	3622.9	15.4	73.0
710.0	9813.5	11.7	86.0
700.0	10549.9	9.9	94.0
681.5	11282.2	8.6	80.0
644.7	12787.6	6.1	60.0
608.8	14321.7	2.0	77.0
600.6	14682.0	2.0	52.0
576.4	15770.0	0	48.0
553.6	17786.4	-3.8	34.0
531.4	18089.3	-5.1	29.0
509.0	19011.0	-4.5	25.0
500.0	19473.0	-4.5	25.0
415.2	24191.6	-15.1	20.0
409.0	25117.7	-16.1	26.0
351.2	28301.2	-22.7	25.0
331.2	29710.3	-25.2	25.0
321.3	30933.3	-27.1	25.0
311.0	31174.0	-28.0	25.0
300.0	32051.8	-30.6	20.0
280.2	33633.9	-35.3	20.0
252.7	35085.4	-39.1	20.0
250.0	36227.8	-39.4	20.0
223.4	38738.7	-44.3	20.0
202.8	40355.9	-48.5	20.0
203.0	41157.5	-48.3	20.0
150.0	47312.9	-62.0	20.0
131.2	49002.8	-58.4	20.0
109.0	53512.0	-74.9	20.0
106.4	54150.5	-74.3	20.0
100.0	55175.9	-70.9	20.0
92.7	56760.0	-70.3	20.0
70.6	59631.6	-72.6	20.0
76.0	62190.8	-61.9	20.0
54.0	6740.8	-55.9	20.0
50.0	69180.2	-58.5	20.0
37.0	75973.5	-55.9	20.0

STATION ALTITUDE 5089.00 FEET MSL
 20 JULY 63
 ASCENSION NO. 302

SYNOPSIS LEVEL DATA
 2010020302
 WHITE SANDS

0845 MDT

302

TABLE 9 Cont'd

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MGL FEET	TEMPERATURE		REL. HUM. PERCENT
		AIR	WIND	
		DEGREES	CENTIGRADE	
30.0	70055.9	-49.3		
21.2	65568.3	-46.4		
20.0	63925.4	-47.2		
16.2	93495.4	-42.1		
10.0	106243.2	-36.0		
9.2	106365.3	-35.0		

GEODETIC COORDINATES
32-40043 LAT DEG
106-37033 LONG DEG

UPPER AIR DATA
2010020002
WHITE SANDS
TABLE 10

STATION ALTITUDE 3000.0 FEET MSL
20 JULY 63
ACQUISITION NO. 302
0845 MDT

GEODETIC ALTITUDE FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KILOTS	DIRECTION DEGREES (TR)	WIND DATA SPEED KILOTS	INDEX OF REFRACTION
3989.0	883.0	26.0	54.0	1021.0	676.4	140.0	6.0	1.000305
4000.0	883.5	26.0	54.1	1020.0	676.4	140.2	6.0	1.000305
4500.0	863.1	25.0	60.4	1005.0	675.5	150.5	6.4	1.000306
5000.0	853.2	22.2	63.4	998.7	672.1	159.5	6.9	1.000296
5500.0	830.3	20.0	65.0	986.1	670.4	167.1	7.6	1.000290
6000.0	823.6	19.9	66.2	972.1	669.3	173.3	8.3	1.000285
6500.0	803.2	19.0	67.4	958.5	668.2	170.3	8.4	1.000279
7000.0	793.1	18.0	68.6	944.8	667.0	178.3	8.2	1.000274
7500.0	781.2	17.1	69.9	931.4	665.9	177.9	7.4	1.000269
8000.0	767.4	16.3	71.3	917.4	665.0	175.5	6.3	1.000264
8500.0	753.0	15.6	72.7	903.0	664.1	172.0	5.9	1.000260
9000.0	740.4	14.7	77.1	891.8	662.5	168.3	5.9	1.000256
9500.0	727.2	12.7	82.6	880.7	660.7	170.0	5.3	1.000253
10000.0	714.1	11.2	88.0	869.5	659.0	174.7	4.4	1.000249
10500.0	701.5	10.0	93.5	857.4	657.6	157.7	3.1	1.000245
11000.0	688.6	9.1	98.3	845.0	656.4	119.4	2.5	1.000238
11500.0	676.0	8.2	83.9	832.7	655.2	80.5	4.5	1.000229
12000.0	663.7	7.4	74.6	820.5	654.0	67.8	7.3	1.000220
12500.0	651.6	6.6	65.3	808.5	652.8	62.9	10.4	1.000211
13000.0	639.6	5.5	62.4	796.9	651.4	61.4	13.4	1.000205
13500.0	627.8	4.2	67.9	785.9	649.9	60.4	15.6	1.000203
14000.0	616.2	2.9	73.4	775.1	648.3	70.6	17.4	1.000200
14500.0	604.7	2.0	64.6	763.5	647.1	77.2	16.3	1.000193
15000.0	593.4	1.4	50.8	751.5	646.2	84.9	15.3	1.000185
15500.0	582.5	.5	46.0	739.0	645.1	95.8	13.1	1.000181
16000.0	571.9	-.4	46.4	728.5	643.9	109.4	11.5	1.000176
16500.0	560.5	-1.4	42.9	717.4	642.8	112.6	11.5	1.000172
17000.0	549.9	-2.3	39.5	706.4	641.6	114.9	11.5	1.000168
17500.0	539.5	-3.3	36.0	695.5	640.4	114.8	11.5	1.000164
18000.0	529.5	-4.0	33.0	684.4	639.4	124.7	11.3	1.000160
18500.0	519.1	-4.6	30.8	672.9	638.7	147.6	12.1	1.000157
19000.0	509.2	-4.6	25.4	659.9	638.7	150.7	13.1	1.000153
19500.0	499.5	-4.6	25.0	647.5	638.7	161.0	13.6	1.000150
20000.0	489.7	-5.7	25.1	637.4	637.4	154.1	12.5	1.000147
20500.0	480.2	-6.8	25.2	627.6	636.0	147.2	11.8	1.000145
21000.0	470.8	-7.9	25.3	618.0	634.7	140.6	11.9	1.000142
21500.0	461.6	-9.1	25.4	608.5	633.3	147.1	11.9	1.000140
22000.0	452.6	-10.2	25.5	599.3	631.9	151.6	11.9	1.000137
22500.0	443.8	-11.3	25.6	590.1	630.6	153.0	11.7	1.000135
23000.0	435.2	-12.4	25.7	581.1	629.2	147.9	11.1	1.000133

STATION ALTITUDE 3900.00 FEET MSL
20 JULY 63 0845 MDT
ASCENSION NO. 302

UPPER AIR DATA
2010020562
WHITE SANDS

GEODETIC COORDINATES
32.40093 LAT DEG
106.37033 LONG DEG

TABLE 10 Cont'd

GEODETIC ALTITUDE FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TH)	SPEED KNOTS	INDEX OF REFRACTION
23500.0	420.7	-13.5	25.9	572.5	627.9	139.4	10.6	1.000131
24000.0	415.3	-14.7	26.0	563.6	626.5	128.0	10.4	1.000128
24500.0	410.1	-15.4	26.0	554.1	625.5	129.7	10.0	1.000126
25000.0	401.9	-16.0	26.0	544.2	624.9	135.3	9.5	1.000124
25500.0	395.8	-16.9	25.9	535.1	623.8	130.8	9.5	1.000122
26000.0	385.8	-17.0	25.7	526.4	622.5	137.4	9.5	1.000119
26500.0	376.0	-17.6	25.6	517.9	621.2	128.5	9.2	1.000117
27000.0	370.4	-20.0	25.4	509.5	619.9	118.0	9.0	1.000115
27500.0	362.9	-21.0	25.3	501.5	618.7	108.8	9.2	1.000113
28000.0	355.6	-22.1	25.1	493.2	617.4	100.2	9.6	1.000111
28500.0	348.5	-23.1	25.0	485.0	616.2	100.6	10.1	1.000109
29000.0	341.1	-23.9	25.0	476.7	615.1	102.2	10.7	1.000108
29500.0	334.1	-24.3	25.0	468.6	614.0	102.0	10.8	1.000106
30000.0	327.2	-26.0	25.0	461.0	612.5	101.7	11.0	1.000104
30500.0	320.4	-27.2	25.0	453.7	611.0	102.0	11.5	1.000102
31000.0	313.7	-27.8	25.0	445.5	610.3	102.8	12.0	1.000100
31500.0	307.1	-29.0	25.4	438.1	608.8	104.3	12.6	1.000098
32000.0	300.7	-30.4	25.9	431.5	607.0	104.9	12.9	1.000097
32500.0	294.5	-31.9	26.0	424.9	605.1	104.6	13.0	1.000095
33000.0	288.8	-33.4	26.0	418.4	603.2	103.9	13.0	1.000094
33500.0	281.8	-34.9	26.0	412.0	601.4	103.0	13.1	1.000092
34000.0	275.7	-35.9	26.0	404.8	600.1	102.0	13.1	1.000091
34500.0	269.7	-36.7	26.0	397.4	598.1	101.0	13.0	1.000089
35000.0	263.9	-37.5	26.0	390.1	596.1	99.2	12.8	1.000087
35500.0	258.1	-38.3	26.0	382.9	594.0	90.9	12.4	1.000086
36000.0	252.5	-39.1	26.0	375.9	596.0	90.8	12.5	1.000084
36500.0	247.2	-39.9	25.2*	368.9	595.0	83.7	12.9	1.000082
37000.0	241.5	-40.9	18.0**	362.2	593.7	75.1	12.9	1.000081
37500.0	235.1	-41.9	12.0**	355.7	592.5	65.6	13.0	1.000079
38000.0	230.9	-42.9	7.6**	349.5	591.2	62.9	12.8	1.000078
38500.0	225.9	-43.8	2.5**	343.0	589.9	62.3	12.3	1.000076
39000.0	220.7	-44.8		336.8	588.7	63.9	12.1	1.000075
39500.0	215.8	-45.6		330.6	587.4	66.4	11.9	1.000074
40000.0	210.9	-46.6		324.6	586.1	66.1	12.3	1.000072
40500.0	206.1	-47.3		318.6	584.8	63.6	13.2	1.000071
41000.0	201.5	-48.4		312.5	584.0	61.3	14.3	1.000070
41500.0	196.8	-49.1		305.9	583.2	59.2	15.9	1.000068
42000.0	192.2	-50.2		300.5	581.7	53.8	17.4	1.000067
42500.0	187.6	-51.3		294.7	580.2	63.2	18.4	1.000066
43000.0	183.2	-52.5		289.5	578.7	60.6	20.4	1.000064

** AT ELEVATION OF 39000.0 FEET LATITUDE DIFFERITY VALUE WAS USED FOR THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET NSL
20 JULY 83 0845 MDT
ASCENSION I.O. 362

UPPER AIR DATA
2016020302
WHITE SANDS

GEOGRAPHIC COORDINATES
32.40043 LAT DEG
106.37033 LONG DEG

TABLE 10 Cont'd

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CM ³	SPEED OF SOUND KI/MS	WIND DATA DIRECTION DEGREES (TN)	WIND KNOTS	INDEX OF REFRACTION
43500.0	170.7	-53.6		283.9	577.2	63.4	21.9	1.000063
44000.0	170.7	-54.7		276.7	575.0	70.6	23.1	1.000062
44500.0	170.6	-55.9		273.6	574.3	75.8	23.2	1.000061
45000.0	160.6	-57.0		268.5	572.8	81.7	23.7	1.000060
45500.0	162.7	-58.1		263.6	571.3	89.5	25.1	1.000059
46000.0	153.0	-59.3		250.8	569.8	94.3	26.6	1.000058
46500.0	153.2	-60.4		254.1	568.3	94.9	27.8	1.000057
47000.0	151.5	-61.5		249.4	566.7	96.3	28.0	1.000056
47500.0	147.4	-62.7		244.6	565.2	98.5	27.0	1.000055
48000.0	144.2	-63.9		240.1	563.6	101.3	26.5	1.000053
48500.0	140.7	-65.1		235.5	562.0	105.4	27.4	1.000052
49000.0	137.2	-66.3		231.1	560.4	109.2	28.5	1.000051
49500.0	133.9	-67.4		226.7	558.8	106.4	25.0	1.000050
50000.0	130.5	-68.6		222.3	557.2	107.1	21.4	1.000048
50500.0	127.2	-69.5		217.6	555.0	99.9	17.2	1.000047
51000.0	124.0	-70.4		213.0	554.8	65.4	13.3	1.000046
51500.0	120.0	-71.3		208.6	553.5	71.3	16.0	1.000045
52000.0	117.0	-72.2		204.2	552.3	64.9	18.7	1.000044
52500.0	114.8	-73.1		199.9	551.0	64.2	20.3	1.000043
53000.0	111.9	-74.0		195.7	549.8	60.8	20.5	1.000041
53500.0	109.1	-74.9		191.0	548.0	57.9	20.6	1.000040
54000.0	106.3	-75.2		186.3	549.2	58.7	20.8	1.000039
54500.0	103.5	-75.2		180.4	550.9	60.6	20.3	1.000037
55000.0	100.6	-75.5		174.3	553.2	64.3	19.4	1.000036
55500.0	98.4	-76.8		169.3	554.2	74.8	18.9	1.000035
56000.0	95.9	-78.0		164.9	554.5	79.1	19.7	1.000034
56500.0	93.5	-79.0		160.6	554.7	85.1	20.6	1.000033
57000.0	91.1	-79.5		156.0	554.6	86.2	22.4	1.000032
57500.0	88.8	-79.9		152.9	554.1	88.6	24.6	1.000031
58000.0	86.5	-71.3		149.4	553.5	90.8	26.0	1.000030
58500.0	84.0	-71.7		145.9	553.0	93.7	27.9	1.000029
59000.0	82.2	-72.1		142.5	552.4	96.3	29.3	1.000028
59500.0	80.1	-72.5		139.1	551.9	93.4	30.1	1.000027
60000.0	78.1	-71.1		134.7	553.6	102.4	30.1	1.000026
60500.0	76.2	-69.0		130.0	556.7	105.3	28.5	1.000025
61000.0	74.3	-66.0		125.5	559.5	111.6	26.4	1.000025
61500.0	72.5	-64.8		121.2	562.3			
62000.0	70.7	-62.7		117.0	565.2			
62500.0	69.0	-61.5		113.5	566.7			
63000.0	67.3	-61.0		110.5	567.5			

GEODETIC COORDINATES
32.40043 LAT DEG
106.37033 LON DEG

UPPER AIR DATA
2010020302
WHITE SANDS

TABLE 10 cont'd

STATION ALTITUDE 3939.00 FEET MSL
20 JULY 83 0835 MDT
ASCENSION NO. 302

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CELSIUS	DEWPOINT TEMPERATURE DEGREES CELSIUS	REL. HUM. PERCENT	WIND DIRECTION DEGREES (T)	WIND SPEED KNOTS	INDEX OF REFRACTION
63500.0	65.7	-60.4		107.0	113.8	23.3	1.000024
64000.0	64.1	-59.3		104.7	110.7	20.2	1.000023
64500.0	62.6	-59.2		102.0	114.8	18.1	1.000023
65000.0	61.1	-58.6		99.3	112.1	16.0	1.000022
65500.0	59.7	-58.0		96.6	112.2	13.4	1.000022
66000.0	58.2	-57.5		94.1	117.3	10.2	1.000021
66500.0	56.9	-56.9		91.6	126.2	7.2	1.000020
67000.0	55.5	-56.3		89.2	131.8	3.0	1.000020
67500.0	54.2	-56.1		87.0	270.5	1.3	1.000019
68000.0	52.9	-56.8		85.2	327.7	2.8	1.000019
68500.0	51.7	-57.5		83.5	5.2	4.6	1.000019
69000.0	50.4	-58.2		81.8	19.6	7.2	1.000018
69500.0	49.2	-58.9		79.9	40.2	10.3	1.000018
70000.0	48.1	-59.2		77.9	50.6	14.0	1.000017
70500.0	46.9	-58.0		76.0	57.8	17.8	1.000017
71000.0	45.8	-57.7		74.1	65.1	21.1	1.000017
71500.0	44.7	-57.5		72.3	70.4	24.7	1.000016
72000.0	43.7	-57.3		70.5	76.6	27.9	1.000016
72500.0	42.7	-57.1		68.8	82.9	31.2	1.000015
73000.0	41.7	-56.9		67.1	88.1	34.8	1.000015
73500.0	40.7	-56.7		65.5	92.0	36.7	1.000015
74000.0	39.8	-56.5		63.8	95.4	38.6	1.000014
74500.0	38.9	-56.3		62.3	98.1	40.1	1.000014
75000.0	37.9	-56.1		60.7	97.6	39.1	1.000014
75500.0	37.0	-55.9		59.3	97.2	38.1	1.000013
76000.0	36.1	-55.1		57.7	96.3	36.7	1.000013
76500.0	35.3	-54.9		56.2	94.8	34.8	1.000013
77000.0	34.5	-53.7		54.7	93.2	32.9	1.000012
77500.0	33.7	-52.9		53.2	92.3	32.6	1.000012
78000.0	32.9	-52.2		51.6	91.6	32.5	1.000012
78500.0	32.1	-51.4		50.5	90.5	32.5	1.000011
79000.0	31.4	-50.7		49.1	88.1	33.2	1.000011
79500.0	30.6	-50.0		47.8	85.9	34.0	1.000011
80000.0	29.9	-49.3		46.6	84.4	34.4	1.000010
80500.0	29.3	-49.0		45.5	83.7	34.6	1.000010
81000.0	28.6	-48.6		44.4	82.9	34.8	1.000010
81500.0	28.0	-48.3		43.3	83.3	34.2	1.000010
82000.0	27.3	-48.0		42.3	83.9	33.4	1.000009
82500.0	26.7	-48.0		41.3	84.6	32.6	1.000009
83000.0	26.1	-47.7		40.3	84.0	31.1	1.000009

UPPER AIR DATA
2010020302
WHITE SANDS

STATION ALTITUDE 3980.00 FEET MSL
20 JULY 83 0845 MDT
ASCENSION 110. 302

OF OPTIC COORDINATES
32.40093 LAT DEG
106.37033 LONG DEG

TABLE 10 Cont'd

OF OPTIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CM ³	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TH)	SPEED KNOTS	INDEX OF REFRACTION
83500.0	25.5	-47.5		39.4	585.3	85.1	29.4	1.000009
84000.0	24.9	-47.2		38.4	585.0	82.2	27.8	1.000009
84500.0	24.4	-47.0		37.5	585.9	83.0	27.3	1.000008
85000.0	23.8	-46.7		36.6	586.5	84.1	27.2	1.000008
85500.0	23.3	-46.4		35.8	586.6	85.4	27.1	1.000008
86000.0	22.7	-46.5		35.0	586.5	87.2	27.3	1.000008
86500.0	22.2	-46.6		34.2	586.5	89.2	27.8	1.000008
87000.0	21.7	-46.8		33.4	586.2	91.2	28.3	1.000007
87500.0	21.2	-46.9		32.7	586.0	91.6	28.4	1.000007
88000.0	20.8	-47.0		32.0	585.9	90.8	28.2	1.000007
88500.0	20.3	-47.1		31.3	585.7	90.1	28.0	1.000007
89000.0	19.8	-47.0		30.6	585.8	89.7	28.5	1.000007
89500.0	19.4	-46.5		29.8	586.0	89.8	29.8	1.000007
90000.0	19.0	-45.9		29.1	587.3	89.9	31.1	1.000006
90500.0	18.5	-45.4		28.4	588.0	90.0	33.4	1.000006
91000.0	18.1	-44.8		27.7	588.7	89.8	38.1	1.000006
91500.0	17.7	-44.3		27.0	589.4	89.7	42.7	1.000006
92000.0	17.3	-43.7		26.3	590.1	89.8	46.8	1.000006
92500.0	16.9	-43.2		25.7	590.0	90.7	48.1	1.000006
93000.0	16.6	-42.6		25.0	591.5	91.6	49.5	1.000006
93500.0	16.2	-42.1		24.4	592.2	92.5	50.8	1.000005
94000.0	15.8	-41.8		23.9	592.5	94.8	49.2	1.000005
94500.0	15.5	-41.6		23.3	592.8	97.2	47.0	1.000005
95000.0	15.2	-41.5		22.8	593.1	99.8	46.4	1.000005
95500.0	14.8	-41.1		22.3	593.5	101.3	45.6	1.000005
96000.0	14.5	-40.8		21.8	593.8	100.9	45.7	1.000005
96500.0	14.2	-40.6		21.3	594.1	100.6	45.7	1.000005
97000.0	13.9	-40.3		20.8	594.4	100.2	45.7	1.000005
97500.0	13.6	-40.1		20.3	594.7	98.8	46.0	1.000005
98000.0	13.3	-39.8		19.6	595.1	97.1	46.3	1.000004
98500.0	13.0	-39.6		19.4	595.4	95.5	46.7	1.000004
99000.0	12.7	-39.3		18.9	595.7	94.2	47.1	1.000004
99500.0	12.4	-39.1		18.5	596.0	93.1	47.8	1.000004
100000.0	12.2	-38.8		18.1	596.3	90.0	48.6	1.000004
100500.0	11.9	-38.6		17.7	596.7	96.9	49.3	1.000004
101000.0	11.6	-38.3		17.3	597.0	97.0	49.8	1.000004
101500.0	11.4	-38.1		16.9	597.3	96.6	50.0	1.000004
102000.0	11.1	-37.4		16.5	597.6	90.2	50.2	1.000004
102500.0	10.9	-37.6		16.1	597.9	93.7	50.5	1.000004
103000.0	10.7	-37.3		15.7	598.3	93.7	50.1	1.000004

STATION ALTITUDE 5939.00 FEET MSL
 20 JULY 83 0845 MDT
 ASCENSION IS. 302

UPPER AIR DATA
 2010020302
 WHITE SANDS

GEODETIC COORDINATES
 32.40043 LAT DEG
 106.37033 LONG DEG

TABLE 10 Cont'd

GEODETIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
103500.0	10.4	-17.1		15.4	598.6	91.4	49.8	1.000003
104000.0	10.2	-30.3		15.0	598.9	89.1	49.5	1.000003
104500.0	10.0	-30.6		14.7	599.2			1.000003
105000.0	9.8	-30.1		14.3	599.8			1.000003
105500.0	9.6	-35.7		14.0	600.3			1.000003
106000.0	9.3	-35.3		13.7	600.8			1.000003

GEODETIC COORDINATES
32.40043 LAT DEG
106.57033 LONG DEG

HAZARDARY LEVELS
2010020302
WHITE SANDS

TABLE 11

STATION ALTITUDE 5949.00 FEET MSL
20 JULY 83 0845 MDT
ASCENSION NO. 302

PRESSURE OF OROGRAPHICAL	FEET	TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
		AIR DEGREES	DEW-POINT CENTIGRADE		DIRECTION DEGREES (TD)	SPEED KNOTS
850.0	5164.	21.6	14.5	64.	161.2	7.0
800.0	6074.	18.0	12.4	68.	177.6	8.3
750.0	8634.	15.3	10.6	75.	171.0	5.9
700.0	10539.	9.9	9.0	94.	155.0	5.0
650.0	12553.	6.5	.2	64.	62.5	10.8
600.0	14601.	2.0	-6.9	52.	80.2	16.0
550.0	16978.	-2.3	-14.2	39.	114.9	11.5
500.0	19445.	-4.5	-21.5	25.	160.7	15.6
450.0	22137.	-10.5	-26.4	20.	153.1	11.9
400.0	25075.	-16.1	-31.1	20.	150.2	9.4
350.0	28331.	-22.8	-37.4	25.	100.2	10.0
300.0	31987.	-30.6	-43.8	26.	104.9	12.9
250.0	36187.	-39.4	-51.5	26.	87.8	14.7
200.0	41056.	-48.3			60.7	14.7
175.0	43901.	-54.7			70.5	23.1
150.0	47093.	-62.0			97.1	27.6
125.0	50707.	-70.1			91.2	14.5
100.0	55003.	-70.9			59.3	20.7
80.0	59335.	-72.5			90.9	20.6
70.0	61975.	-61.9			106.3	29.6
60.0	65132.	-58.2			111.0	14.5
50.0	68917.	-58.5			27.2	8.0
40.0	73501.	-56.6			94.1	37.8
30.0	79011.	-49.3			64.6	34.4
25.0	83511.	-47.2			82.4	28.2
20.0	88404.	-47.2			89.7	27.9
15.0	94744.	-41.2			100.7	46.0
10.0	103871.	-36.6				

